Admitting the correctness of the above propositions, let us see how they apply to instances in which there occur both a fracture and a dislocation, as is not unfrequently the case with the elbow. These cases constitute some of the most perplexing diagnostic problems. Let us suppose a case involving fracture of one or both condyles of the humerus, with dislocation upwards and backwards of one or both bones of the forearm, and apply our tests for the purpose of determining the true state of the joint. If there be a *fracture there must exist a mobility where none existed before*, that is to say, about the condyles, where crepitation may be detected. Again, if there is a dislocation, *there must be impairment of mobility where it existed before*, and consequently the normal movements of the elbow must be restricted. Thus it appears evident that the suggested *principles* are equally applicable and useful in simple and in complicated cases.

Having determined whether we have to deal with a fracture, a dislocation, or a sprain or contusion, there remains only to distinguish between the different fractures and dislocations—a task which presents no difficulties.

With this brief enunciation of my views, and without unnecessary multiplication of words, I submit the following aphorisms to the consideration of the profession:—

1st. Fractures produce mobility where there existed none before.

2d. Dislocations impair mobility where it existed before.

3d. Sprains and contusions occasion neither increase nor diminution of mobility.

AUGUSTA, GA., Nov. 1879.

ARTICLE X.

ON THE RELATIVE VALUE OF THE SULPHATES OF ATROPIA AND OF DUBOISIA IN OPHTHALMIC PRACTICE.

By S. D. RISLEY, M.D., Lecturer on Ophthalmoscopy in the University of Pennsylvania; Ophthalmic and Aural Surgeon to the Episcopal Hospital, Philadelphia.

IN the later part of 1878 I first learned of the new mydriatic Duboisia through the medium of a brief abstract in the number of this Journal for April, 1878, of a paper published by a London ophthalmic surgeon, who claimed for it that its action over the pupil and muscle of accommodation was similar to that of belladonna; but that it was more prompt and energetic, and its effect more evanescent. If these claims were well founded, this new drug it was evident must soon replace the atropia belladonna in certain branches of ophthalmic practice. I at once gave an order to a prominent drug firm for a small quantity of the sulphate of duboisia but did not succeed in procuring it until May 30th, 1879. In the mean time

Dr. Wm. F. Norris had secured some of the drug and began experimenting with it at the eye dispensary of the University Hospital, where I had the opportunity to witness some of the results which he afterwards published in the number of this Journal for April, 1879. On the first of June I began the use of the new mydriatic in my private practice, using it for all purposes for which I had before used atropia, in fact displacing the old mydriatic by the new, both in the treatment of inflammatory troubles, and for paralyzing the ciliary muscle for the correction of refraction errors.

For the latter purpose alone I have up to the present time (Feb. 1st, 1880) employed it in one hundred and forty cases, in eighty of which a careful record was made until the ciliary muscle had regained its function. The object of this paper is to compare the results obtained in these one hundred and forty cases, with my former experience in the use of sulphate of atropia.

The use of atropia in ophthalmic practice was attended with serious inconvenience to the patient suffering from asthenopia consequent upon anomalies of refraction, and in the minds of some ophthalmic surgeons there was a growing distrust of its entire safety. It was claimed that its application even in healthy eyes was followed by increased intra-ocular tension, and in some instances to well-defined attacks of glaucoma.

I am indebted to Dr. A. G. Heyl for calling my attention to the following case of acute glaucoma published by Hugo Magnus.[1]

> A patient who had normal pupillary reaction, tension and visual field, was atropinized for the purpose of examining more thoroughly the cataractous condition of each lens. About five hours later the patient was seized with violent pain in the right eye. He was not seen by Magnus until three weeks later. Examination then showed an acute glaucoma in the stage of decline, the very acute symptoms having subsided. The anterior chamber was shallow, pupil widely (?) dilated, and stationary. T + 2. Moderate ciliary injection and narrow visual field. There was no reason to suppose that a chronic glaucoma had pre-existed.
> "Why the right eye alone was affected is not explained."—Nagel, *Jaresbericht*, 1876.

The means at hand for determining slight degrees of varying tension are so inadequate that statements regarding the invariable increase of tension by the use of atropia must be accepted with extreme caution. I am free to confess that I have never been able to demonstrate to my own satisfaction any *increase* of tension following its use in normal eyes. Palpation of the eyeball is, without doubt, the most reliable method of determining varying degrees of resistance, and even after long practice the muscular sense is not sufficiently delicate to remove all doubt. In a doubtful case it not unfrequently happens that two equally competent and experienced men will differ in judgment as to the state of tension in the eyeball. It is probable furthermore that in healthy eyes the tension differs with varying degrees of arterial pressure.

The later investigations have by no means simplified the subject of glaucoma. It is now clear that the obviously cupped nerve, the stony hard ball, contracted field of vision, etc., are not essential in the glaucomatous process. (Mauthner, *Archiv of Ophthalmology*, vol. viii. No. 1.) While this fact doubtless enhances the danger from the promiscuous use of atropia in unskilled hands, nevertheless it renders it at least probable that the cases of so-called healthy eyes in which the glaucomatous process has been fulminated by the use of the mydriatic, have been eyes already affected by some one of the insidious forms of the disease.

---

[1] Klinische Monatsblätter, Nov. 1876.

The fact, however, is well established, that in certainly glaucomatous eyes the atropia is a most dangerous agent, frequently setting up glaucoma fulminans, in the subacute variety, and causing markedly increased tension and pain in acute glaucoma when mistaken by the unwary for iritis or some other of the more frequent inflammations of the external tunics.

Again in serous iritis, in subacute or chronic inflammations involving the iris, ciliary body, and choroid, it not unfrequently disappoints the surgeon by aggravating all the symptoms, and leading to a positive increase of hardness in the eyeball.

It has, therefore, been long recognized that atropia should be used with skilful caution.

I am convinced, however, that in healthy eyes the sulphate of atropia may be used with impunity for the purpose of setting aside temporarily the function of the ciliary muscle. This judgment is based upon an experience sufficiently large. In the daily routine of private work I have corrected over 900 cases of refraction error under atropia. In these a solution of the sulphate of atropia, gr. iv–f℥j, was used for periods varying from twenty-four hours to several weeks, three times daily. At the Eye Dispensary of the University Hospital, since 1871, all of the cases applying for relief from accommodative asthenopia have been treated in like manner and aggregate a very much larger number. I am not aware of any injury resulting from its use, and in no instance have I regretted its application. It has frequently happened in my office that complaints against some other surgeon have been entered because of the application of atropia, and the statement made that the eyes had never been as good since as before the atropia was used. When inspection, however, showed a normal sharpness of sight and range of accommodation I have been disposed to take these statements *cum grano salis*. The following case is one illustrating with some force how some of the prejudice against the use of mydriatics has been manufactured :—

Mrs. B., æt. 43, came complaining of severe asthenopia. The distress following the least use of her eyes had for several years compelled her to lead a life of idleness and wretchedness since she could not sit at a lecture, walk the street, or ride in cars or carriages—unless with her eyes closed—without paying a severe penalty in an attack of "sick headache."

A careful study revealed the existence of hypermetropic astigmatism with high insufficiency of the internal rectus muscles. She was advised that her troubles possibly depended upon these anomalies, and that they should be corrected. She promptly declined unless the correcting-glass could be ordered without the use of atropia. She then related that it had been used once, and a glass ordered two hours after its instillation; that her eyes had never been as good since;—yet by her own relation she had for years before been a great sufferer. After a short effort to select a glass for her the ciliary muscle was found in a state of constant change, and I declined to advise her any further unless she submitted to the use of the atropia. She was given a formula for the atropia solution, and requested to return to her home in the centre of the State, and, if she saw fit to change her mind, use them for a few days and return. In two weeks she returned entirely free from her asthenopia, having used the drops on her own responsibility for more than a week three times daily, and was delighted with the relief which had followed. No difficulty was now experienced in selecting the correcting-glasses, from the use of which permanent relief was secured.

Now it is doubtless true that a very much exaggerated edition of the story of her injury by atropia had been repeated to her friends, and by them spread still further. The subsequent result proved her mistake. These stories of injury related by wandering patients should be received, certainly by ophthalmic surgeons, only after careful scientific proof of their truthfulness. The above case is but one from a very large group.

The *necessity* for this method in the correction of the anomalies of refraction and accommodation is a conviction which has become more deeply rooted with enlarging experience in its employment. The undue strain upon the ciliary muscle, and the discord between the accommodation and convergence, which is introduced by the errors of refraction, are very sure in hardly worked eyes to lead sooner or later to hyperæmia of the choroid and retina, and a condition of irritability which will not subside except under enforced and frequently prolonged rest of the eyes from work at a near point. This may often be accomplished by prolonged absence from school, or protracted avoidance of the ordinary employment for the eyes. This alone, however, will frequently fail; and for the reason that absolute rest cannot in this way be secured. No sooner is comparative comfort experienced than use of the eyes is begun, the morning paper if nothing else proving a constant temptation. Moreover, it is impossible even to walk about without a constant activity of the accommodating muscle. Under the use of atropia the ciliary muscle is paralyzed, and its constant action on the choroid thus dismissed. Under its use the retino-choroidal irritation very rapidly subsides. The undue sensitiveness to light, at first increased by the dilatation of the pupil, soon disappears; the increased redness of the optic nerve surface and the engorgement of the choroidal and retinal vessels subsides, and the periorbital neuralgia and occipital pain are relieved. Farther than this it is quite impossible in a large number of cases to ascertain the correcting-glass without first paralyzing the ciliary muscle, all glasses in many cases being persistently rejected, and that, too, by the cases most in need of them; or if a glass is accepted at all it is very likely to be very far from a true correcting-glass. Hypermetropic eyes not infrequently select weak concave glasses instead of the needed convex correcting lens. The following is a case in point, selected as the representative of a large group of cases, which will also illustrate the necessity of a protracted use of the drug as intimated above:—

Mrs. S., æt. 26, consulted me in May, 1879, in consequence of inability to use her eyes for even short intervals without causing a burning and itching in her eyelids with increased flow of tears. If the effort to sew or read were persisted in she would have an attack of "sick headache." Indeed she suffered almost constantly with temple pains, and a sense of weight and soreness in the occipital region. The conjunctivæ were finely injected and the edges of the lids red and scaly, and she had frequently occurring styes—$V = \frac{6}{9}$ in each eye ($\frac{20}{30}$), and she could read Jr. D = 5 up to 18 cm., this being the nearest possible point.

She had been ordered, two years before, after twenty-four hours' application of atropia solution concave $\frac{1}{48}$ to be worn constantly, and with this she had normal sharpness of sight, but could wear her glasses for only a short time without great increase of her suffering. The ophthalmoscope showed marked choroido-retinal irritation, and the light from the ophthalmoscopic mirror was painful. The atropia solution (4 gr.–f℥j) was applied three times daily for four days before there was any marked amelioration of her symptoms. The first two days she still selected a concave glass. On the fifth day the eyes were quiet and comfortable. The dread of light had disappeared entirely, and V without glasses had sunk to $\frac{6}{24}$, with + (convex) 1, D $V = \frac{6}{6}$ or normal. This was ordered for constant wear. Three months later there had been no return of the symptoms; she could now use her eyes with impunity and with her correcting-glass (+ 1 D) $V = \frac{6}{6}$ Jr. D = .5 p. p. 17 cm.

In this case, as in the preceding, it would have been impossible without the mydriatic to have ascertained and corrected the existing error.

Hypermetropes not infrequently by spasm of the ciliary muscle simulate myopia. I have many times found them wearing concave glasses selected at the nearest opticians. Myopes, as a rule, select glasses very much higher than is necessary to correct the existing defect. The only means at our command by which all uncertainty can be removed is in the use of some agent to paralyze the accommodating muscle, which otherwise must stand as an unknown quantity to vitiate results.

This necessity is, however, an unfortunate contingent. The use of any agent which for the time removes the power of adjustment is a serious inconvenience to the patient. The eye can be focused only for its far point, consequently the individual is unable to read and write except in cases of sufficiently high myopia. If the myopia be equal to $\frac{1}{14}$ or more the far point is then at most 14″ from the eye, which is quite near enough to read ordinary print, and such individuals suffer but little inconvenience unless the myopia is complicated with a considerable degree of astigmatism. Even after the most candid statement to patients of the effect of the drug they are frequently alarmed by the reality, and need constantly to be reassured. It is difficult to realize the great value of the power of adjustment for varying distances until it is lost. The merchant who for many days finds himself unable to sign a check, or look over his ledger and correspondence, or to read his daily paper, grows extremely restive, and would not again submit to it himself or advise his friends to do so except in the case of a most urgent necessity.

The annoyance does not always stop with the blurred sight and inability to read. The widely dilated pupils permit a flood of light to enter the eyes, perhaps already unduly sensitive to their normal stimulant, so that smoked glasses are necessary to shield the eyes from the glare of light when out of doors. These are unsightly and expose him to the inquiries of anxious friends or inquisitive acquaintances, to which many persons are extremely sensitive. The solution often flows freely into the nasal passages through the tear ducts and is swallowed, not unfrequently giving rise to the constitutional impression of the drug—*e. g.*, dry throat, pasty tongue, hot skin, etc.

In two cases I saw a mild form of strangury produced by it, and in one case incontinence of urine with flushed face, dry throat, loose stools, accompanied by a mild intoxication. These cases are rare, and are, doubtless, due to some idiosyncrasy or a lavish use of the drops. In one of these cases, a gentleman suffering from progressive myopia, the constitutional impression seemed to be due to some peculiar condition of the system at the time, since he had no trouble whatever a year later when it was found necessary to use the atropia again, which was done in the same manner in all particulars as at the first.

The annoyance from the blurred sight continues for from ten days to three weeks after omitting the atropia.

In eighty cases selected consecutively from my private case-book, being the last cases treated under atropia before adopting the duboisia in its stead, the average time the atropia was used was five and a quarter days; the shortest time being one day—four instillations; the longest sixteen days. The invariable method of using it was a drop or two of a four-grain solution instilled into each eye three times daily. Unfortunately for the purpose of this paper, no accurate record has been made of the returning function of the ciliary muscle after omitting the use of the drops. While this is to be regretted, nevertheless, ample opportunity has been afforded in the routine of practice to observe very closely the date of return. There are some conditions which render it desirable to await the full return of the power of accommodation before ordering the reading glasses—*e. g.*, where it was expected that it would be necessary to add prisms to the correcting-glasses for use while reading. It was very rare to find the muscular power restored before the *tenth day*, and very frequently a longer time than this was required. In cases where the solution has been used more than twenty-four or thirty-six hours the power of accommodation was not fully restored before the end of the second week, or even longer than this in some cases. Ordinarily in from seven to ten days they were able to read very coarse print, or their own handwriting when held far from the eyes. If the effort to read was persisted in the eyes soon tired and the page blurred again. From this time the recovery was rapid, so that on the twelfth to the fourteenth day the near point had returned to the place recorded before the application was made, and the iris had regained its normal activity; so that the duration of treatment was rarely less than two weeks, and in many cases three weeks or longer from the first instillation to the full return of the function of accommodation.

Neutral solutions of sulphate of atropia have but very rarely caused any trouble from the conjunctival irritation; it is probable that distilled water dropped into the eye three or four times daily, for many days, would cause more or less irritation. Trouble has been occasionally experienced from acid solutions of atropia, or from some unknown defect in its preparation which has rendered it irritating. The difficulty, however, has quite invariably disappeared when a carefully prepared solution was obtained. It has frequently happened under the prolonged use of atropia that, after a time, some complaint would be made that the drops caused smarting after each application, which they had not done at first. My habit has been, in these cases, to evert the lids and touch them lightly with a crystal of alum, which has quite uniformly removed the hyperæmia, and with it all cause for complaint. The atropia more frequently relieves in a few days the hyperæmia which had before existed. It is very common to see the blepharitis ciliaris, which so constantly depends upon eye-strain, entirely removed by the use of atropia without any other application, and before the optician has had time to furnish the required correcting glass.

In old people who have been operated upon for cataract, I have repeatedly seen the conjunctiva grow puffy, with engorgement of the circulation, and enlarged papillæ in the retro-tarsal folds, after its prolonged use. but have always been able to continue it by using at the same time a weak astringent solution, either combining the alum or sulphate of zinc with the atropia, or instilling it separately a few moments before or afterward.

I have had but one case which affords an exception to the above statements.

A school-girl, with hypermetropic astigmatism, who was compelled to stay from school because of her weak eyes, came to the eye dispensary at the University Hospital for relief. There was found, in addition to her error of refraction, marked retinal irritation, and, at the upper and temporal side of each nerve, a yellowish-red patch of choroid, outlined by small pigment heaps. She was ordered, in addition to other measures, an atropia collyrium and smoked glasses. The following day she returned with catarrh of the conjunctiva, and complained that each application caused intense smarting.

Supposing she had a badly prepared solution, she was directed to our own apothecary at the hospital for a renewal, which, however, produced the same result, and was not relieved by the astringent. Tension remained normal. The atropia was stopped, and in ten days the pupil was normal in size and the conjunctiva healthy. She was now directed a solution of duboisia sulphat. (gr. ij–f℥j), which produced the same result as the atropia had done; but it was now in great measure relieved by the alum crystal, and a collyrium of the same at home, to be used ten minutes before the duboisia; but at no time did she use the drops comfortably.

In regard, then, to the conjunctival irritation following the use of atropia, there has been but slight cause to enter complaint.

The greatest drawback to the use of sulphate of atropia was its tardy action in paralyzing the power of accommodation, and, this once gained, the persistency of its effect. Any drug which would accomplish this purpose more rapidly without danger, and, withal, resign its control more quickly than the atropia had done, would be more valuable than the atropia in the same proportion in which it possessed these advantages. That the sulphate of duboisia possesses in high degree these advantages the writer thinks is borne out by his experience in its use in one hundred and forty cases of refractive error.

My own observations regarding the rapidity of its action over the pupil and accommodation have accorded in the main with the published results of other observers. It was hoped that in the new mydriatic we had found a drug which in a very short time, *i. e.*, in a few hours, would paralyze the accommodation and admit of a speedy determination of any existing error, thereby saving valuable time both to patient and surgeon. In this hope I have been disappointed, except in a few cases where the choroid and retina had not suffered from the accommodative strain. In one hundred and forty cases there were seven examples of this kind where, from one to two hours after the first instillation, not a vestige of the accommodative power remained. In all but two of these cases this was verified by the continued use of the drops, and in one case by the continued use of atropia for one week subsequently. One of these patients was a medical student, with $H = \frac{1}{6}$. He consented to its application for three days, three times daily. Each day he selected the same glass, which was finally ordered for him. His eye, however, had not suffered in the least from its defect of refraction, his only trouble being the inability to maintain distinct sight. In each of these cases the eyes were healthy.

The same result was repeatedly sought in other cases *one*, *two*, and *three* hours after the first instillation, but in only these seven cases was this gratifying result attained. In four of these cases a four-grain solution of duboisia sulph. was used, while in three cases a two-grain solution was instilled into the eye.

In the majority of cases applying for relief from eye-strain, there will be found more or less hyperæmia of the end of the optic nerve, and irritation of the retina and choroid. In such cases it is futile to hope that any agent will in a few hours produce the requisite quietude in the ciliary muscle. *It is probable, furthermore, that such a result is in many cases not desirable*, the continued use of the drops being necessary until the retino-choroidal irritation shall have subsided. A few moments of trial for a correcting glass is often quite sufficient to stimulate the ciliary muscles into active contraction again in these irritable eyes, and a careful measurement of the existing error can be made only after the entire subsidence of the hyperæmia of the choroid and retina.

The stronger solution (gr. iv.—f℥j), with only a few exceptions, caused giddiness, weakness in the knees, and a desire to sleep, attended in some instances, with hallucinations. One gentleman said he no sooner sat down, than he began to dream ; but always that he was reading fine print, which he could with difficulty make out, and frequently, when aroused, would be holding his hands and arms in the same position as that usually adopted in holding his morning paper.

A lady who had for two days been using a two-grain solution without any constitutional impression, became so weak after a drop of a four-grain solution that she had to take a reclining chair. The dryness of the mouth and throat was not nearly so marked as with atropia, even when the constitutional impression resulted. These symptoms usually lasted from half an hour to one hour, and no further inconvenience was experienced. These marked general symptoms following its use very soon deterred me from employing the stronger preparation.

Since the first few weeks of my experience with the duboisia, a solution of 2 grs. to f℥j has been invariably employed.

Solutions of this strength were used with the same impunity I had before used the four-grain solution of atropia. A two-grain solution was ordered, and the patient directed to instil one or two drops in each eye, three times daily. The constitutional impressions rarely resulted, and then in very mild form, a sense of weakness in the knees being the symptom most frequently complained of. A number of times patients have complained, within ten or fifteen minutes after the first instillation, of being giddy. One person described it as the same sensation produced by swinging, or turning around and around rapidly. I believe this to be due to the rapid or sudden action over the pupil and ciliary muscle, and not to any constitutional impression, since it disappears with equal rapidity and is not experienced afterwards.

The weaker preparation of the duboisia has proved more rapidly effective in paralyzing the ciliary muscle than the four-grain solution of atropia had been, and has caused less inconvenience to the patient from the constitutional impression of the drug. In three of the cases I had before used the atropia. A medical student who had, a few months before, suffered great inconvenience from the constitutional effect of the belladonna, was able to use the duboisia solution five days, three times daily, without constitutional symptoms, and very positively expressed himself in favour of the latter.

The average time required for the use of the duboisia sulphate was *three and a quarter days*, while it was required to use the atropia solution, in a like number of cases, *five and a quarter days*. After the use of atropia, ability to read is not secured until from the *seventh* to the *tenth* day, while after duboisia, the morning paper can be read in two to four days, and the accommodation is fully restored on the sixth or seventh day, even after its use has been continued for many days.

A few irregularities have been observed in the return of accommodation. In one case on the third day the range of accommodation had returned to $\frac{1}{8}$, that is to say, he could, with his correcting glasses, read Jr. 3 at 8″ (p. p.); but on the fourth day the pupils were again widely dilated, and there was no range of accommodation. On the fifth day, however, he could read easily, and the subsequent progress was normal. The iris, in a number of cases, had not recovered from the influence of the drug when the range of accommodation had fully returned. No accurate record was made of the state of the pupil, but I have the impression that the function of the ciliary muscle is recovered sooner than the function of the iris. The opposite is undoubtedly true regarding atropia.

In two cases, aged, respectively, 24 and 33 years, the returning range of accommodation followed that usual after the use of atropia. On the fourth day, with correcting glass and $+\frac{1}{12}$ added, p. p. 8″. Seventh day, 6″. On the eighth day, with correcting glass alone, the near point had reached, in the first, 7″; in the other (æt. 33), 8″. These cases, so widely separated in this respect from the others in which the duboisia was used, lead me to suspect that there had been a mistake upon the part of the druggist who supplied the solution used at home.

My impression is that the duboisia causes more conjunctival irritation than the atropia. It is quite common to hear the complaint, after a few days, that the drops caused smarting, when at first they had not done so. In a few cases where atropia had been used in the past, either by myself or others, I used the duboisia without intimating, until the close of the treatment, that any different preparation had been employed. In most cases no difference was noticed by the patient regarding his immediate inconvenience. One gentleman, however, asked me if the same drops had been used as had been employed one year before. He voluntarily stated then that he discovered, to his surprise, that on the second day after the drops were stopped he could sign and read a check very comfortably, and on the morning of the third day boasted of being able to read his morning paper in my waiting room, which he was quite sure he was not able to do before, *i. e.*, under the atropia, inside of ten days. He had also at first been made very uncomfortable by the atropia and had noticed no difference in this respect from the duboisia, but I had used a four grain solution instead of the usual two grain solution.

A careful study of the individual cases has shown that the average number of days as stated above, viz. $3\frac{1}{4}$ days, required to use the duboisia is very much too high.

Thus, *e. g.*, the drops were used—

28 days in	1 case.
14 "	1 "
11 "	1 "
7 "	2 cases.
6 "	4 "
5 "	10 "
4 "	11 "
3 "	28 "
2 " or less	23 "

If we exclude from the table those cases in which the use of the drops was prolonged because of retino-choroidal disturbance; and make due allowance for a number of cases living away from the city, in which an earlier visit would have shortened the time during which the drops were used, the average time the drops were used in healthy eyes will fall to about two days.

It will be seen then that the duration of the treatment in all ordinary cases of refractive error will fall within one week counting from the first instillation of the duboisia to the return of accommodative function; whereas under atropia from two to three weeks were required.

In the earlier cases in which the stronger solution (gr. iv–f℥j) had been used, the accommodation was recovered as soon as in those in which the weaker solution had been used; no difference being shown by the record in this respect. Nor did the protracted use of the drug seem to cause any variation in the duration of its effect over the function of the ciliary muscle after stopping its use.

In the treatment of inflammations of the conjunctiva, cornea, and iris, duboisia has proved quite as efficacious as atropia, but has not seemed to present any advantage, while its greater cost will at present commend the use of the old mydriatic. In the marked pain and photophobia in a case of corneal abrasion, and in numerous cases of phlyctenular disease, the result was apparently the same as though atropia had been used.

In the treatment of iritis and irido-choroiditis its effect was equally efficacious with atropia, but not more so in tearing loose posterior synechia. In a single case of rheumatic iritis, however, the duboisia exhibited a very important advantage over atropia. On the introduction of duboisia into ophthalmic practice a very interesting inquiry presented itself, viz., *would the new mydriatic be equally dangerous in glaucomatous eyes?*

The following case as an answer to this inquiry is of great interest:—

Mrs. M., æt. 63, consulted me in May, 1879, for failing sight, O. D. V=$\frac{6}{12}$, O. S. $\frac{6}{9}$. She complained that there was a fine mist before her eyes constantly. No pain. The cornea was transparent, but through the undilated pupil the fundus was indistinctly seen. Tension normal. A weak solution of atropia was instilled in order to afford a careful study of the lens and deeper structure. The sectors of the lens were too plainly seen even for her time of life, and in O. D. a few opaque spicula were seen shooting toward the posterior pole from the lower and inner quadrant, far out in the periphery of the lens. The nerve was apparently healthy, but in the anterior plane of the vitreous a strong convex lens revealed a fine veil-like web with innumerable fine dark points distributed through it. Through it the fundus seemed simply hazy. No unpleasant symptoms followed the instillation of the atropia. On the 16th of August the misty vision had quite disappeared and $V = \frac{6}{6}$? (with dif.). Sept. 2d she returned after a drive through the Park facing a cool wind with, in O. D., intense photophobia, marked periorbital neuralgia, and ciliary redness and tenderness to the touch. T. *n.* The pupil was narrow and iris discoloured and fixed, *i. e.*, no reaction with change of light and shade. A *four-grain* solution of duboisia was instilled and revealed a broad firm synechia binding the lower pupillary margin to the anterior capsule. She was directed the same solution to use at home every three hours. The pain was very rapidly reduced, and in two days the synechia had torn loose. The eye became rapidly quiet, the duboisia being stopped on the 5th. She complained bitterly of the drops. During their continuance she felt weak, had dry and hot skin and throat, with marked giddiness.

The attack had caused marked diminution of sight in the right eye, but this slowly improved until Sept. 13th, when she had a relapse of the iritis with synechia, which during the following six weeks was repeated in milder attacks one of which occurred in the left eye, each time accompanied with the formation of delicate synechiæ but which each time were torn loose by a mydriatic. Owing to the distress the duboisia had caused she was allowed a solution of atropia instead of the duboisia to use at home.

This worked well during the first relapse, which in a few days had quite disappeared. On Oct. 1st she returned with a second relapse in the right eye. The atropia had caused decided increase in the pain, and the tension was increased. T. = +1. A fine synechia had again formed, causing irregular dilatation of the pupil under the mydriatic.

She was suffering very great pain, and was very sure it had been aggravated by the atropia. A solution of eserine was instilled into the eye, but so far from affording relief led to very greatly increased suffering. Two leeches were now applied to the temple, with immediate relief from the intense suffering, but the following day there was much dread of light. T. +1—ciliary tenderness with constantly dull pain in the eye with occasional spurts of perorbital neuralgia. The synechia was still present, ciliary redness well-marked, cornea transparent, anterior chamber narrower than in left eye. The possible necessity for iridectomy was pointed out. Not caring to risk a second application of the eserine after the experience of the evening before, I instilled a two-grain solution of duboisia gtt. 1 into the eye and sat down to await results. In half an hour the dull pain in the eye grew better, and the instillation was repeated three times within the next twenty-four hours. The eye was then found free from pain, the ciliary redness less marked, anterior chamber same as in left eye, and the synechia had *torn loose;* the tension was normal. During the following two months there were three recurrences of the iritis, all treated with the duboisia, but there was no return of the glaucomatous symptoms.

At the present writing the eyes have been well for two months, O. D. $V=\frac{6}{6}$? O. S. $V=\frac{6}{6}$.

I am fully aware of the small value to be attached to a single case regarding the action of any drug, but this one has, nevertheless, seemed of sufficient importance to be placed on record. In two cases of chronic iridocyclitis I have used the duboisia without any increased tension following, but atropia has been used in a great number of similar cases without producing ill results.

From the foregoing the following conclusions seem justifiable.

1. That in solutions not stronger than two grains to the ounce duboisia sulphate is free from danger.
2. That the two-grain solution of duboisia sulphate more rapidly paralyzes the ciliary muscle than a four-grain solution of atropia sulphate.
3. That the duration of its effect is less than half that of atropia sulphate.
4. That the preparations now in the market are more liable to irritate the conjunctiva than neutral solutions of the sulphate of atropia.
5. That in the treatment of inflammations of the eye duboisia is quite as useful as atropia, and may therefore be used as a substitute.

In concluding this paper I desire to express my obligations to Dr. Gordon M. Christoni for his careful aid in selecting from my case-book and tabulating the cases corrected under duboisia.

ARTICLE XI.

CASE OF UTERINE FIBROID TREATED BY ERGOTINE INJECTIONS, AND FINALLY REMOVED BY MEANS OF THOMAS'S SCOOP. By MARY PUTNAM JACOBI, M.D., of New York.

MRS. S., æt. 42, mother of nine children, of which the youngest is eight years old, consulted me on July 3d for menorrhagia and metrorrhagia of five years' standing. Intense anæmia had been developed in consequence of the repeated and prolonged hemorrhages, and the skin of the patient had a subicteric tint, which from time to time deepened to a real jaundice hue. She was subject to attacks of aphonia, which, singularly enough, did not coincide with periods of hemorrhage, but alternated with them; the voice being regained as soon as the flow set in. For this aphonia, even more singularly, the patient had received, during six months, local treatment of the larynx at the clinic of a specialist.

A year before consulting me, Mrs. S. had been sent to the clinic of an eminent gynæcologist, and, as far as I could understand from her report, the hemorrhage had been ascribed to granulations, which were then removed. After this, she was better for a little while, but all symptoms soon returned, and at the time of consulting me, uterine hemorrhage had been going on for a month, and still persisted. It was unattended by pain.

Physical examination of the uterus disclosed two principal facts. The uterus, which was entirely in place, was, to bimanual palpation, consider-